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FOR THE BENEFIT OF THE LESS DEVELOPED AREAS

SUMMARY

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United Kingdom

THE ASSESSMENT OF THE HEALTH HAZARD TO CONSUMERS ARISING FROM THE USE OF CHEMICALS IN FOOD : PROCESSING AND PRESERVATION

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SUMMARY

"The assessment of the health hazard to consumers, arising from the use of chemicals in food processing and preservation"

by L. Golberg, D.Sc., D.Phil, M.A., M.B., B.Chir., F.R.I.C.

1. The presence of direct additives and adventitious chemical residues in food is important to everyone concerned with making full use of scientific and technological advances without at the same time endangering the health of the people.

2. In Britain, procedures exist to facilitate the safe introduction of new agricultural chemicals. Chemicals to help the food manufacturer or distributor, however, are only permitted under severely circumscribed conditions. In the less developed areas the benefits conferred by food additives in preventing losses by spoilage and thereby facilitating nutritional improvement in difficult environments justify the adoption of a less uncompromising attitude. Even in such countries however there arises an increasing need for careful supervision, especially in connection with substances introduced into food as processing aids, migrating from packaging material or remaining as residues from pesticides or herbicides.

3. The toxicological basis for ensuring acceptability of any food chemical rests largely on animal tests which have become ever more elaborate and expensive to perform. In spite of this, they leave many questions open to doubt. Extensive fundamental research is required in order to replace our present reliance on negative findings in animals by a positive approach emphasizing the biological potential of a compound - its action on living cells and organized systems, described in terms of modern basic sciences, particularly Biochemistry, Pharmacology and Pathology.

4. It was partly for this purpose that the British Industrial Biological Research Association (B.I.B.R.A.) was set up in 1960 jointly by the British Government and food, chemical, cosmetics and packaging manufacturers. Studies are already under way which are intended to provide rapid and efficient methods of preliminary toxicity screening for new compounds. In addition, other aspects of B.I.B.R.A.'s programme are concerned with dietary chemicals in body fat and the effects of malnutrition, and infectious and other disease

processes on the hazard presented by such chemicals. B.I.B.R.A. feels that insufficient attention has been paid in the past to environmental influences and that a new approach must take these factors into account.

The practical approach to safety evaluation

5. Faced with the practical problem of deciding whether a particular food additive or pesticide is acceptable when used in a specified manner, the legislator and his technical advisers have inevitably to fall back on simple rules which are readily applied.

6. With certain provisos it can be confidently stated that the 90-day chronic test, carried out in two species of laboratory animal, will long remain the keystone of safety studies. With a compound which is not too distantly related to accepted food additives, a thorough 90-day test conducted by skilful workers will reveal all, or practically all, that is forthcoming from a 2-year study. The detection of possible carcinogenicity still remains a serious problem and the development of an accelerated test for this purpose is also one of B.I.B.R.A.'s research objectives.

7. The extrapolation of animal testing results to man is greatly facilitated by knowledge of the principal human metabolic pathways of the new compound. Provided an animal species is found whose metabolism of the test substance is similar to man's, safety evaluation in this species is far more satisfactory than random testing.

Provision for future needs

8. How is an emergent nation to attempt to deal with food additives ? One way would be to imitate what is done in the field of drugs, where the British or U.S. Pharmacopoeias are used as a yardstick. For several reasons this course if often impracticable.

9. What is needed is: information, to keep the country's scientists is touch with world developments in the legislative and scientific spheres; and testing and research facilities with first-class personnel embracing all the various disciplines involved in safety evaluation. Until such time as an international organization exists which can fulfil all these functions, the British Industrial Biological Research Association, as an independent non- rofit making body, is ready to undertake this task for the benefit of the less developed areas.

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